

of a vast thickness of sedimentary deposits overlying the Gaj or marine Miocene, and containing *Amphicyon*, *Mastodon*, *Dinotherium*, and many Artiodactyles of the supposed pig-like ruminant group, lead to the belief that the author was not justified in opposing the theory enunciated by Lyddeker and the Directors of the Survey. The position of these Manchhar strata on the flanks of the mountain-system of Sind was compared with that of the sub-Himalayan deposits. The faunas were compared, and the Sewalik deposits, the equivalents of the Upper Manchhar series of Sind, were pronounced to be of Pliocene age. They were formed before and during the great upheaval of the Himalayas, and in some places are covered with glacial deposits.

A comparison was instituted between these ossiferous strata and the beds of Eppelsheim and Pikermi; and the author discussed the question relating to the age of terrestrial accumulations overlying marine deposits.

2. "On two new Crinoids from the Upper Chalk of Southern Sweden." By P. H. Carpenter, Esq., M.A. Communicated by Prof. P. Martin Duncan, M.B. Lond., F.R.S., F.G.S.

Stem-joints of a Crinoid resembling those of *Bourgueticrinus* have long been known in the Plänerkalk of Streben (Elbe); but on the discovery of the calyx it was found to differ considerably from that genus. It was then referred to the genus *Antedon* by Prof. Geinitz. Stems also resembling *Bourgueticrinus* have been found in the Upper Chalk of Köpinge (S. Sweden); and a calyx resembling that described by Prof. Geinitz has also been found. Prof. Lundgren kindly intrusted this to the author for description.

For these two fossils he considers not only a new genus but also a new family required. He proposes for the former the name *Mesocrinus*, as the characters of its calyx ally it to the Pentacrinidæ. The author describes the characteristics of the genus *Mesocrinus*, and of the species *M. sueдика* (the Swedish species), and its differences from *M. Fischeri* (from Streben), and discusses the relationships of the genus, which combines the characters of a *Pentacrinus*-calyx with a *Bourgueticrinus*-stem.

A new species of Comatula (*Antedon impressa*) from the Ignaherga Limestone of Scania was also described, and its systematic position discussed.

DUBLIN MICROSCOPICAL CLUB.

January 15, 1880.

Nostoc paradoxum, Welw.—Prof. E. Perceval Wright, in exhibiting a minute portion of *Nostoc paradoxum*, Welw., said that he had been able, through the kindness of Mr. Carruthers, to forward morsels of four so-called Nostocs from Dr. Welwitsch's collection to Dr. Bornet, who was engaged in working out the species of this group, and that he had found that No. 19, from "Mossamedes, at an elevation

of 1000 feet" (1859), was *Glæotrichia natans*, Thuret. No. 20, "*N. paradoxum*," might perhaps be a distinct thing; but the specimen found "ad muscos dense cæspitosos, juxta rivulos pr. Pedra Souague in ipso Præsidio, 1857," was both sterile and young; and if Dr. Bornet had found such in France he would not have hesitated to refer it to *Nostoc ellipso sporum*. No. 21, "hab. ad rupes vulcani prope Cabondo, tempore pluvio, Feb. 1857," was no doubt *Nostoc commune*; and to this species might also be referred No. 22, found "ad rupes."

Cystoliths in Leaves of Gymnostachum and Fittonia.—Mr. Greenwood Pim showed sections of the leaves of *Gymnostachum* and *Fittonia*, in which were remarkable cystoliths, hitherto unrecorded from these genera, although met with in other allied Acanthaceæ. These bodies were rounded oblong in shape, slightly tubercular, and apparently destitute of any suspensor (as in *Ficus elastica*), and of cellulose basis, as dilute nitric acid dissolved them almost entirely, leaving a scarcely perceptible residuum. They were much larger than the cells of the parenchyma of the leaf, in which they occupy intercellular spaces. There appeared but little, if any, specific distinction between the leaves of *Gymnostachum Verschaffeltii* and *Fittonia argyrroneura*, the two species exhibited. Subsequent examination of some half dozen of the forms of Acanthaceæ showed very similar bodies in all but one genus, *Aphelandra*. The other genera in which Mr. Pim observed these were *Justicia*, *Thyrsacanthus*, and *Adhatoda*, those of the last named being longer and more clavate than in the other forms.

Dr. Zimmermann's Preparations of Fungi.—Dr. M^cNab showed some examples of Dr. Zimmermann's preparations of minute fungi, remarkable for the skill arrived at and success attained in preserving these delicate objects.

Cosmarium isthmochondrum, Nordst., new to Ireland.—Mr. Archer showed *Cosmarium isthmochondrum*, Nordst., from Connemara, new to Ireland. This was, in unison with Nordstedt's experience in Sweden, found in company with another rare species, *Cosmarium quinarium*, Lundell; and, if carelessly viewed, the two species might be confounded, as Nordstedt remarks. But they are very distinct things; indeed, once their differences are grasped, they could readily be distinguished, even under the lowest power. The conspicuous and rather large and prominent papilla immediately over the isthmus on each front surface of each semicell is a marked feature of the form in question (*Cosmarium isthmochondrum*), and one very readily seen. There could be no doubt that both the forms entirely agree with those of Sweden. They are both very rare in Ireland. As yet *C. quinarium* has not turned up in the east; it extremely sparingly presents itself in Westmeath; but now and again in spots a somewhat copious gathering may be made in Connemara; it is more rare in the south-west.

February 19, 1880.

A Verticillium on Polyporus versicolor.—Mr. Pim showed a species of *Verticillium* which grew in great quantities on decaying *Polyporus versicolor* on stumps in a cold fernery at Monkstown. As he could not satisfactorily determine the species, he sent specimens to the Rev. J. E. Vize, who said he believed it to be *Polyactis vera*. Mr. Pim, however, thought it rather a true *Verticillium*, most probably *V. epimyces*, B. Br.

Structure of Siphon of Mya arenaria.—Prof. H. W. Mackintosh exhibited two sections of the siphon of the common Lamellibranch *Mya arenaria*, one being median, the other distal. Both showed a large amount of muscular tissue, the circular fibres being few in the median, but well marked in the distal part. The septum between the two tubes was composed of a band of connective tissue, which at each end radiated out and formed a network, enclosing in its meshes the bundles of muscle. At each extremity of the septum were placed a large blood-vessel with a nerve on each side. The external surface was composed of a layer of epithelium containing large masses of black pigment-cells corresponding to the periostracum; outside this was a layer of gelatinous substance presenting a stratified appearance, most probably consisting of mucus. The distal section showed that the siphonal tentacles began as processes of the walls of the tubes, which became longer as the orifice was approached. Their first beginnings could be detected some distance down in the tube. Both Rutherford's carmine and Ranvier's picrocarmine had been used; but the former gave the better results.

Sections of Calculi.—Mr. B. Wills Richardson exhibited two sections of calculi: one was an excellent specimen of oxalate-of-lime calculus, and probably had its source in the kidney; the other was one of several passed at intervals, and evidently came from the prostate, the symptoms pointing to that origin. The sections were made by Mr. Baker of London. The longest diameter of the oxalate-of-lime calculus was $\frac{1}{4}$ inch, and of the phosphate-of-lime $\frac{3}{16}$ inch.

Staurastrum brasiliense, Lundell, new to Ireland.—Mr. Archer presented examples from Connemara (two only, all he had seen) of that noble form, *Staurastrum brasiliense*, Lundell, non Nordstedt. Lundell, in the text, gives expression to the supposition that this fine species, as regards the arrangement of the endochrome, presented a state intermediate between the central and parietal mode, or rather, as it were, uniting those two types. Mr. Archer had satisfied himself, on getting a good end view of a quite fresh example, that such is not the case, as the endochrome radiates in double plates from the centre towards the angles—in a word, agreeing with the type presented by the majority of *Staurastrum*, and not at all with the parietal arrangement, such as occurs in *S. tumidum* &c. Mr. Archer could hardly acquiesce in the opinion that

Nordstedt's Brazilian species could be truly the same as the Swedish and Irish one, which were precisely identical; the former is smaller, and cannot be at all so noble an object. At first glance so fine a thing is most striking; and when first noticed, Mr. Archer, attracted by the three conspicuous spines at the angle, was momentarily under the impression that he had encountered *S. Royanum* in Ireland, itself a large and fine species, but still a good deal smaller than *S. brasiliense*; but a second glance showed the mistake, and *S. Royanum* still remains undetected out of Glencoe, in Scotland; nor did a search there on the occasion of a visit in the autumn of 1880 redisclose it.

April 16, 1880.

Pandorea Traversii, J. Ag.—Prof. E. Perceval Wright showed a preparation of *Pandorea Traversii*, J. Ag. species, for which he was indebted for specimens to Prof. J. G. Agardh. It seems to show some interesting points of resemblance between the structures long since described to the Club in the young growing fronds of *Griffithsia setacea* by Dr. Wright.

The "puncta" distributed over the smooth cell-walls of Desmidiæ are really pits or depressions, not thickenings or points different in tint from the rest of the membrane.—Mr. Archer brought under notice some empty cell-walls of *Cosmarium pyramidatum* and some other Desmidiæ, in order to draw attention to the "puncta" or dots covering the superficies, with a view to show that these puncta are really depressions or pits, not either mere darker, or brighter, or thicker points of the wall or membrane. Whether these depressions might not sometimes represent tubules passing right through, he would leave in abeyance. That they really indicate hollows or pits is, in minute forms very "finely punctate," somewhat difficult of verification; but on looking over a series of the "smooth" forms, as the puncta become more and more "coarse" the fact seems very readily made out, until in such large forms as the larger *Euastra* they appear, especially on the inflated prominences, decided minute cup-like hollows. It may be, indeed, that these pits may present the appearance of having become filled with some more solid substance, like a kind of excretion through such openings, giving some forms a pseudogranulate aspect. May it be possible that the radiating lines noticeable in the enveloping mucous investment of many of such forms stand in direct connexion with these "puncta"? and may such lines represent tubules carried on through such mucous coat? Forth from these radiating lines or striæ in the mucus, which naturally stand vertically to the superficies of the cell-membrane, it is that "Bacterium-like" (to be no more precise) bodies may sometimes (though the occasions are rare) be seen to issue, and all the more readily on application of some pressure on the covering-glass, and then slowly totter off—a fact that probably has not been generally noticed. The nature of the puncta and markings in general on the Diatoms has often been the subject of dispute; but no one seems to have paid much attention to test what the nature of the

puncta in the Desmids is, which was Mr. Archer's apology for bringing forward the subject on the present occasion.

Advantages of Double Staining with Logwood and Eosin.—Dr. R. J. Harvey showed an ordinary typical specimen of epithelium as illustrative of the advantage to be derived in some cases by double staining with logwood and eosin. The staining by the logwood was confined for the most part to the connective-tissue elements, which were of a rich blue-purple, whilst the epithelium was stained a most brilliant rose-red by the eosin. The epitheliomatous nests made thus a most striking contrast with the surrounding sarcomatous structure.

May 20, 1880.

Trachelomonas bulla, *T. volvocina*, and a new very hispid form.—Mr. Archer showed living examples of a few Flagellata belonging to *Trachelomonas*—*T. bulla*, *T. volvocina*, as well as a very hispid and ornate form, probably a new species. This was a large form, the spines fore and aft long and numerous; neck rather long, and margined by a few rather long spines; the body egg-shaped, and bordered by a number of shorter spines; internal colour vivid green; eye-speck brilliant; motion fidgety, but active. This is probably the prettiest and most ornate of the pretty forms appertaining here, and might stand as *Trachelomonas acanthophora*, n. sp.

Ramularia cryptostegiae, n. sp., Pim.—Mr. Greenwood Pim showed *Ramularia cryptostegiae*, Pim. This form, according to Dr. Cooke, who examined the specimen, is a new species, and is described under the above name in the current number of 'Grevillea.' The threads are more developed than in the other species of the genus; spores large, oblong, and very numerous, with one to three very delicate septa. The plant grew on seeds of a *Cryptostegia*, sown in a small pot in Mr. Pim's stove at Monkstown. Mr. Pim also drew attention to the fact that he had been able, by the use of alcohol and glycerine jelly, to mount Moulds more satisfactorily than by using other methods previously tried. Doubtless it was in this way that the exquisite preparations by Dr. Zimmermann, shown by Dr. M'Nab at a previous meeting of the Club, were mounted.

Structure of Arms of Rossia macrosoma.—Prof. H. W. Mackintosh exhibited a transverse section of one of the arms of the Cephalopod *Rossia macrosoma*, which showed a large central nerve occupying the axis of what appeared like a canal, the rest of the cavity of which was filled with a crystalline substance, probably sodium chloride; outside this was a well-marked layer of connective tissue, sending out bands between the bundles of longitudinal muscles which formed the bulk of the intermediate part of the arm. These bands again united to form a second sheath, external to which was another stratum of muscle, both longitudinal and circular, with nerve-branches through it. This stratum graduated insensibly into the many-layered integument. There were bands of circular

muscle in the inner sheath of connective tissue; but no vessels could be observed.

Problematical Vegetable Growths.—Dr. E. Perceval Wright exhibited two forms of vegetable growth which had made their appearance in bottles of salt water in which *Bryopsis plumosa* had been kept growing over the winter. One of them was evidently a fungal form, giving rise to immense masses of hyphæ, with at intervals large groups of conidia; this form chiefly grew under the water. The other, apparently a chlorophyllaceous form, was to be met with just on the margins of the water, and growing up towards the cork, in air. It was marvellously polymorphic in the outline of its cells, which, at one time connected to form irregular filaments, at another separate, differed so much in shape from one another as to make it a matter of difficulty to find half a dozen alike. There did not seem to be any organic connexion between the two. Small morsels of the hyphæ, when placed on a morsel of orange, fructified, and were apparently to be referred to *Mucor mucedo*; but the specimen got spoilt before this point could be authoritatively decided. The green alga continued to grow, forming little fluffy tufts.

Zygosporos of Xanthidium Robinsonianum, Archer, exhibited for the second season.—Mr. Crowe presented zygosporos of *Xanthidium Robinsonianum*, Archer, quite bearing out, when fully developed, their characters of last year. These examples were taken at the same locality in co. Kildare.

Staining of Spinal Cord of Bullock.—Mr. B. Wills Richardson exhibited a cross section from the lumbar portion of the spinal cord of a bullock, stained in three colours, viz. carmine, picric yellow, and lilac. By daylight the three tints were very distinct; but by ordinary paraffin lamplight the picric yellow and the lilac could scarcely be seen. However, by placing a piece of blue glass beneath the slide, the picric yellow could then be distinguished. The section was mounted in Klein's damar solution.

Aniline Blue and Logwood Staining.—Dr. Harvey showed two specimens illustrative of a new method of staining with aniline blue-black and logwood. The blue-black is dissolved in $\frac{1}{2}$ -per-cent. solution of alum, and mixed with the ordinary aqueous solution of logwood chips in about the proportion of three to one. The first preparation was a specimen of the interauricular system from the heart of a frog, showing the pneumogastric nerves and intrinsic ganglia *in situ*. It was mounted in glycerine. The second was a transverse section of the lumbar portion of the spinal cord of a child. It was mounted in damar. Dr. Harvey stated that he had got much better results by the use of this method than by the use of either dye separately.

Cosmarium Wittrockii, Lundell, new to Ireland (probably new to Britain).—Mr. Archer exhibited, for the first time noticed in Ireland, he believed in Britain, *Cosmarium Wittrockii*, Lundell, a minute but pretty little species that might easily enough be overlooked.